

**Learning Achievement at the Grade 4 Level in the Interactive Radio Instruction (IRI) Centres: Report on the Comparative Study of the Basic Competencies in English and Mathematics in the IRI Centres and GRZ Schools**

The Examinations Council of Zambia on Behalf of the Education Broadcasting Services (EBS)

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SO2: Improved quality of basic education for more school-aged children

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Learning Achievement at the Grade 4 Level in the Interactive Radio  
Instruction (IRI) Centres

**Report**

**On**

The Comparative Study of the Basic Competencies in English and  
Mathematics in the IRI Centres and GRZ Schools

**The Examinations Council of Zambia on Behalf of the Education  
Broadcasting Services (EBS)**

**Ministry of Education**

**Lusaka**

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## **Part One: Introduction**

### **1.1. Background to the IRI Programme**

Interactive Radio Instruction is a methodology of education delivery by radio. The emphasis of IRI is on audience involvement and marks a change from earlier forms of education.

In the past, although the radio was used for instructional purposes, it usually followed the traditional class room form of education. The teacher taught while the students just listened. There was very little pupil participation.

In the IRI methodology, emphasis is on interaction between the radio teacher and the learners. Research has shown that learning is more effective when students are involved in the learning process.

The other important aspect of IRI is the presence of a mentor who is a link between the radio teacher and the children.

IRI has been used the world over to solve different problems. It started in Nicaragua where the radio was used to improve the quality of teaching Mathematics. It was successful. IRI was used in Bolivia to teach mothers early child hood education. It was also used in south Africa and Swaziland to teach Literacy. In all these countries IRI was successful. In Zambia IRI is being used to increase access to education for out of school children.

However, whatever the purpose of IRI the underlying principles are the same. It is highly interactive, it involves learners in a variety of activities such as games drills, stories, physical activities, songs and many others.

There is also the aspect of translation of unfamiliar or new concepts in a local language. The other characteristic is that IRI lessons are evaluated (formative evaluation) before they are broadcast. This allows for an improvement of programmes.

## 2.0. IRI IN ZAMBIA

IRI was introduced in Zambia in the year 2000. This was as a result of many children who were out of school. At the time of the introduction of IRI, 750,000 children were out-of-school, including orphans. This became a source of concern to Government which has the obligation of offering basic Education to all children of school going age.

The National Policy on Education entitled 'Educating our future' emphasises Government's recognition of the basic right of every Zambian to good quality education. However, Government alone with its limited resources can not achieve this goal. There is need to explore other avenues such as distance Education especially the use of radio. This mode of learning is cheaper and captures a wide audience. It was for this reason that the Ministry of Education, through Educational Broadcasting Services was tasked with the responsibility of producing Educational radio programmes popularly known as 'Learning at Taonga Market. The concept of a market serves as a rich and ideal setting for interaction in a market situation.

The programme started as a pilot project in July 2000. It was officially opened by the then Minister of Education Brigadier General Godfrey Miyanda. As pointed out the programme started as a Pilot in Lusaka, Chilanga and Chongwe. There were only 15 centres then. Later the programme was extended to all the Provinces in the country. There are now about 400 centres through out the country, with approximately 12,000 children receiving IRI lessons.

Some of the obligations of Government are to produce the programmes, provide student requisites such as books, pencils, board, chalk, pay for air time as well as teachers.

The communities were expected to provide shelter or meeting places, radios and mentors as well as support for them. However, there is an increasing lack of support for mentors by the communities. This is attributed to high poverty levels by the local communities.

There is, therefore, need for NGOs, Church Organisations and other Community Based Organisations to support IRI centres. Incorporating all pedagogical principles much govern IRI these include distributed learning which is a technique of arranging teaching items in such a way that there systematic repetition of the same in subsequent programmes, lessons are also supposed to include active, learning

activities and there should be interactivity. IRI lessons are subjected to vigorous formative evaluation, whose results provide information which is fed into future programmes and past programmes.

### 2.1. **LESSON REVIEW AND RECORDING**

The lesson are also reviewed by a team of reviewers for quality and appropriateness of content before broadcast.

Recording of programmes is done at EBS and Radio actors are hired on contract present radio lessons.

Producers guide the radio recording process in the studio. The studio uses a variety of media and modern equipment.

### 2.2. **ORGANISATION OF GRADE 4 IRI PROGRAMMES**

Interactive radio lessons are broadcast daily using the Zambia National Broadcasting Radio 2 channel. Each lesson is 30 minutes in duration. Grade four radio lessons are divided into two areas – English/Social Studies and life skills, the other one is Mathematics/Science and Life skills.

### 2.3. **DESIGN PROCESS**

The lessons confirm to the IRI standard design process which starts with making the design document which is a collection of activities that will be carried out in the production of an IRI programme. The document consists of the scope and sequence of topics to be taught, it also contains a profile of radio characters, Master plans for each lesson and radio scripts.

### 2.4. **WRITERS/PRODUCERS**

Lessons are written by a team of writers/producers who have extensive teaching experience and have been trained in the IRI methodology. Each lesson is carefully planned, and incorporates interactive radio instruction pedagogical principles these include active learning, distributed learning techniques, rigorous formative evaluation, and different formats of presenting of learning items like drama, stories, drills, games, songs and chants. Educational Broadcasting Services management is responsible for organising mentor training. Some producers/writers are also part of the training team.

## 2.5. **OUTREACH ACTIVITIES**

Education Broadcasting Services through its out reach unit collaborates with communities, NGO'S, churches and donor agencies working with Interactive Radio Instruction learning centres in various parts of the country.

## 2.6. **CALENDAR/TIME TABLE**

The grade four programmes are broadcast twice daily. The Maths/Science is broadcast from 11:00 hours to 11:30 hours the programme is repeated in the afternoon from 15:00 hours to 15:30 hours. English and Social Studies broadcast starts at 11:30 to 12:00 hours the same programme is repeated in the afternoon from 16:00 hours to 16:30 hours. Two hundred programmes are broadcast covering a period of 20 weeks.

#### 1.4 Organisation of IRI

#### 1.5 Objectives of the Comparative Study

##### **Background**

The Interactive Radio Instruction (IRI) is a methodology of teaching through radio which requires learners to participate actively during the lesson. Learners take part in the activities just as they do in a regular classroom.

In spite of some obvious differences between the regular IRI programme for Grade 4 aims at fulfilling the 4 GRZ syllabus in 6 months.

It has been claimed that the learners produced by the IRI programme are just as good as those produced by the GRZ regular schools.

In an effort to evaluate the effectiveness of the IRI programme, it was decided that validated competence tests in English and Mathematics be administered to the pupils at the grade 4 level in both the IRI and GRZ regular schools.

This comparative study has objectives:

1. To assess the learning achievement levels of the IRI and GRZ Grade 4 learners in Maths and English.
2. To compare the learning achievement levels of the IRI and the GRZ grade 4 learners in Maths and English.
3. To evaluate the learning conditions in the IRI centres.

## **Part Two: Study Design**

### **2.0 STUDY DESIGN**

#### **2.1 Sampling Procedures**

- 2.1.1 The sampling units for this study were 970 children who were about to complete their Grade 4 work in the IRI centres and 842 Grade 5 pupils who had completed their Grade 4 work in 2002. The IRI pupils completed their Grade 4 - six months' coursework on January 16<sup>th</sup> 2003.
- 2.1.2 The 970 children from the IRI centres were sampled from 15 districts and 51 centres.
- 2.1.3 The 842 children from the GRZ schools were sampled from 7 provinces, 17 districts and 43 schools.

Table 1.0 and Table 2.0 show the province name, district name, number of boys and girls for the different centres and schools respectively.

**Table 1.0: IRI Sampled Centres**

No.	Province	District	Centre Name	Female	Male	No. of Pupils
1.	Copperbelt	Ndola	Twapia A	10	10	20
			Chipulukusu	10	10	20
			Nkhwazi	10	10	20
			Kaloko	7	13	20
			Twapia	11	9	20
		Chingola	Kapisha Taonga A	10	10	20
		Chigayo	6	14	20	
		Kapisha Taonga B				
2.	Eastern	Chipata	Changu	7	3	10
			Mshawa	5	10	15
			Makangila	7	11	18
		Nyimba	Tigwilizane	9	11	20
			Kakonkho	10	10	20
			Kayongo	17	3	20
3.	Lusaka	Lusaka	Bajleni	8	12	20
			Kamanga	9	11	20
			Chainda	10	10	20
			Garden	11	9	20
			Kaunda Square	15	5	20
		Chongwe	Chibengele	6	14	20
			Mwachilele	12	8	20
			Shiyala	4	16	20
			Ngwerere	11	9	20
		Kafue	Sinu	10	10	20
			Linda	4	7	11
		Luangwa	Chitope	6	14	20
4.	Northern	Kasama	Kasama Village	9	11	20
			Musenga	6	12	18
			Mulambe	12	8	19
			Mponda	6	14	20
			Luyeye	10	10	20
5.	Southern	Monze	Singonya	9	6	15
			Chona	3	10	13
			Hampongo	5	8	13
			Chipembele	13	17	30
			Cheelo	15	14	29
			Naluca	5	10	15
			Hanamaila	8	21	29
			Namakube	4	6	10
		Choma	Kanchomba	11	9	20
			Choompa	15	1	16
			Kasikili	4	11	15
6.	Western	Mongu	Kapulanga	11	9	20
			Limulunga	8	4	12
7.	Luapula	Mansa	Chitondo	8	12	20
			Mutima	7	13	20
8.	Central	Mkushi	Itala	11	9	20
9.	North-western	Solwezi	Chalalankuba	8	12	20
			Bukwansho	13	7	20
			Katoka	6	14	20
			Chawama	12	8	20
TOTAL				401	459	970



Table 2.0: GRZ Sampled Centres

No.	Province	District	Centre Name	Female	Male	No. of Pupils
1.	Copperbelt	Ndola	Twapia	9	11	20
			Twalubuka	9	11	20
			Mwabombeni	20	-	20
			Nkhwazi	10	10	20
		Chingola	Luano	10	10	20
			New Mushishima			
Kitwe	Twatasha	11	9	20		
	Ipusukilo	10	10	20		
	Riverain	9	11	20		
2.	Eastern	Chipata	J.M. Cronje	10	10	20
			Hillside	10	10	20
			Makangila	8	13	20
		Nyimba	Mulira	8	12	20
			Chankanga	8	12	20
		Petauke	Mizyu	9	11	20
Kabvumbe	8	12	20			
3.	Lusaka	Lusaka	Bajleni	9	11	20
			Twatasha	9	11	20
			Kanyama	10	10	20
			Vera Chiluba	10	10	20
			St. Patricks	19	1	20
		Chongwe	Mulola	9	11	20
			Nyangwenya	10	10	20
		Ellensdale	11	9	20	
Kafue	Mutendere	11	9	20		
4.	Northern	Kasama	Mubanga Chipoya	16	11	20
		Mpika	Kabale	10	10	20
			Malambwa	10	10	20
		Isoka	Chiwanda	10	10	20
5.	Southern	Monze	Namakube	8	12	20
			Chipembele	10	10	20
			Chona	7	13	20
			Naluca	10	10	20
			Singonya	10	10	20
		Choma	Kanchomba	13	7	20
			Kasikili	7	13	20
			Choompa	10	10	20
6.	Western	Mongu	Kanyonyo	13	7	20
			Mongu Basic	7	13	20
7.	Central	Kapiri-Mposhi	Hill-side	7	13	20
			Kapili	9	11	20
			Angelina Tembo	19	1	20
TOTAL				396	365	842

2.2 Test Administration

2.2.1 Test Instruments

The curriculum areas tested in all the schools and the IRI centres were Mathematics, English paper 2 (Reading and Writing) and English Paper 1B (Listening and Speaking).

In English Reading and Writing, the pupils ability was assessed through comprehension and the ability to respond to written passages. As for the Listening and Speaking Interviews, the pupils responded to the spoken words through an oral interview.

The Mathematics paper tested the pupil's knowledge, comprehension and application in the domains of sets, notation and numeration, addition and subtraction, multiplication, division, number patterns, money, fractions and shapes and measurement.

The test development process was a collaborative effort between ECZ, AIR and EBS. The stages involved in test development are as follows:

- (i) AIR reviews the Grade 4 items in English and Mathematics submitted by the ECZ
- (ii) ECZ compiles pre-testing test papers in English and Mathematics using the reviewed test items.
- (iii) ECZ/EBS pre-tests the two versions of each test papers.
- (iv) ECZ compiles the draft test papers by excluding items that performed badly in the pre-test.
- (v) ECZ consults AIR to review the draft test papers. EBS also reviewed the test papers
- (vi) ECZ adopts the reviewed test papers.

### **Test Administration Procedures**

The tests were administered by officers from the ECZ and EBS as well as the DIPs from the sampled districts.

A briefing on test administration guidelines was conducted for the EBS officers and DIPs in Lusaka.

After the briefing, the DIPs ECZ and EBS officers went to the centres in mid January 2003.

The test administrators followed the following steps in conducting the competence tests:

- (i) Filling-in the questionnaire about the background information about the center.
- (ii) Selecting the 20 pupils.
- (iii) Assigning the pupils with the pupil numbers or codes; the numbers ranged from 1 to 20.
- (iv) Filling-in the pupils' particulars such as: province name and code, district name and code, center name and code, pupil name and code, sex, age and location.
- (v) After filling-in the pupils' particulars, the test administrators should administer the Numeracy Test. The manner of administering should involve the test administrators reading the questions for the pupils and thereafter asking them to write the answers.
- (vi) Following the Maths test was the English paper 2 (Reading and Writing). The same particulars earlier filled-in by the pupils on the Numeracy Test paper cover page, should be filled-in on the English Test paper.
- (vii) The English Paper – (Listening and Speaking) was the third test to be administered. It was essentially an interview. The interview was an individual test and each of the 20 pupils took 10 to 15 minutes to complete the interview.

Whilst the testing in the IRI centres was done in January, the testing in the GRZ schools was done at Grade 5 level and in March owing to three reasons:

- (i) The programme for the grade 4 IRI was completed in January.
- (ii) The tests were administered to the Grade 5s rather than Grade 4s because the Grade 5s were deemed to have completed the Grade 4 work and the 2003 Grade 4s were just in their first term.
- (iii) The GRZ school term began later in mid-February.

**Criteria for Performance Analysis**

The main criteria for analyzing performance will be the total marks obtained on the whole test papers and the marks also obtained per topic (objective) of the test paper.

The specifications for the test papers were developed by both the ECZ and the AIR consultant. The constitution of the test paper first involved an extensive review of the Specifications for Mathematics.

Table:

No.	Topics	Knowledge	Comprehension	Application	No. of Questions
1	Sets				3
2	Notation and Numeration				2
3	Addition and Subtraction				5
4	Multiplication				5
5	Division				5
6	Number Patterns				2
7	Decimal Measures				1
8	Shapes and Measurements				4
9	Fractions				3
	TOTALS				30

The test items that had been used for the Grade 4 Basic Competence Tests. The Mathematics test consisted of 30 non-multiple choice items. 20 of the questions used numerals and simple mathematical symbols only; the remaining 10 questions required basic reading – literacy though a very basic level. The items that were presented in form of word problems were No. 9, 13, 14, 15, 18, 19, 20, 25, 26 and 27. All of the numerical concepts and procedures used in the test were taken from the textbooks and materials used for Grade 4. The mathematics paper tested the pupils’ knowledge, comprehension and application in the domains or topics of sets, notation and numeration, addition and subtraction, multiplication, division, number patterns, decimal measures, shapes and measurements and fractions. The table above shows the mark distribution under the different domains and cognitive skills.

Table: Test Blue Print for Grade 4 English paper 2 (Reading and Writing)

Grade 4 Literacy: Revised Test Blue Print

Specifications	Knowledge	Understanding	Application	Analysis	Synthesis	TOTAL
READING						
Alphabet	3	-	-	-	-	3
Phonics	3	-	-	-	-	3
Sight Vocabulary	4	-	-	-	-	4
Comprehension	-	4	4	1	1	10
WRITING						
Spelling	3		-			3
Punctuation	-		3			3
Composition	-	2	-	1	1	4
TOTAL	13	6	7	2	2	30

Like the specifications for Mathematics, the English Paper 2 (Reading and Writing) were drawn up by language specialists from the Examinations Council of Zambia (ECZ) and the Curriculum Development Centre (CDC) and then later reviewed by the American Institutes for Research assessment experts. Collectively, the items sought to test the pupils’ ability to recognize and use each letter of the alphabet, recognize and use simple spelling patterns, recognize and read simple words including plurals, read simple sentences, understand the meaning of simple words and understand the meaning of simple sentences. The English Reading and Writing Test also sought to test the pupils’ ability to write each letter of the alphabet, write and spell simple words, write simple sentences and punctuating their writing using capital letters, full stops, commas and question marks.

The paper had 30 marks. There were three questions on the alphabet, three questions on the phonics, four questions on the sight vocabulary, four questions on comprehension application, one question on comprehension analysis, one question on comprehension synthesis, one question on composition synthesis, one question on composition analysis, three questions on spellings, three questions on punctuation and two questions on composition understanding.

Table: Test Blue Print for English paper 1 (Listening and Speaking)

Question number	Topic	Allocated marks	Mark Obtained	Sub-Total
1 –2	About Themselves	2		Part A (Listening)
3	About Their Family	1		
4 –5	Giving Instructions	2		
6 – 7	Giving Directions	2		
8	Performing Tasks – Action	1		
9	Performing Tasks – Touch	1		
10	Performing Tasks – Movement	1		
11	Performing Tasks – Sound	1		
12 – 13	Using Language Socially	2		
14 - 15	Making choices and Correcting False Statements	2		
16 - 17	Time-Table	2		Part B (Speaking)
18 - 20	Home Scene Picture	3		
<b>Total</b>		<b>20</b>		

Paper 1 was a Listening and Speaking paper. Altogether, there were 20 questions. 15 questions were on Listening and 5 questions were on Spelling. Table: shows the specific individual questions that were used for the different categories of items under Listening and Speaking.

### Questionnaire About The Centre

A questionnaire was used to gather background information about the IRI Centres. The same questionnaire was used to capture some information about some of the GRZ schools. The questionnaire captured information about the location of the centres; whether or not they were found in rural, urban or peri-urban. The other aspects investigated were: type of building, condition of center, availability of radios, usability of radios, availability of batteries, mentor's education level, mentor's type of training received, availability of teaching materials, condition of the chalkboard, attendance by pupils in the center and the number of days in a term the mentor was absent due to illness, workshops or other conflicts.

### Data Analysis

The Statistical Package for the Social Sciences (SPSS) was used to analyse the data in different ways. The mean scores were used to describe the data generally. The ANOVAs (Analysis of Variance) were run so as to be able to calculate significance tests on the performance data. The statistics allowed us to determine whether there was statistical significance across the groups.

Basic frequencies were calculated to show the various features and characteristics of the sampled IRI centres and GRZ schools.

The test performance by mean scores were correlated with the other variables such as type of school, gender, location and age by making cross-tabulations in the SPSS.

**Limitations**

There were a number of limitations that were connected to the study:

- The IRI centres and the GRZ schools were tested at different times.
- The sample sizes for the IRI and GRZ were different.
- While the IRI Grade 4 pupils were tested in January, the grade targeted in the GRZ schools were the 2002 Grade 4s who were in their second month in Grade 5. This was done because the pupils were being tested on the Grade 4 work content.

**Report Design**

This report is divided into six parts. The first part is the introduction and it deals with the description of the IRI programme and its objectives. The objectives of the comparative study are also outlined in the introduction. The second part deals with the Study Design. The third part deals with the description of the characteristics of the IRI Centres and the GRZ schools. Part four is concerned with the study Findings in Mathematics for both the IRI and GRZ schools. Part five deals with the Study findings in English. Part six deals with the study findings in Listening and Speaking. Lastly, part seven discusses the general conclusions from the findings and the recommendations.

**Part Four: Results from the Mathematics Test**

**4.1 Introduction**

The results from the Mathematics test will be analysed under five main headings; overall mean mark for the two types of schools, mean scores for the different Maths. Sub-topics for both the IRI centres and the GRZ schools.

**4.2 Overall Mathematics Mean Scores for IRI Centres and GRZ Schools**

Table: Overall Maths Mean Scores for IRI and GRZ Schools

	Median	Overall Mean Scores	S.D
Schools	14.5	13.98 (46.6%)	5.77
IRI Centres	18.0	17.1 (57%)	6.9
Overall	16.0	15.6 (52%)	6.6

The table above shows that in Mathematics, the overall mean score for both the IRI and GRZ was 15.6 out of the maximum of 30. This represented a percentage of 52%.

The results show a significant difference in the mean scores with the IRI Centres having a higher mean score of 17.1 (57%) than the GRZ Schools with a mean score of 13.98 (46%).

The Median scores showed that half ;of the pupils in the IRI centres had 18 or fewer correct responses out of 30 and the pupils in the GRZ schools had 14.5 or fewer correct responses out of 30.

4.3 Sub-Topic Maths Mean Scores for the IRI Centres and GRZ Schools

Table: Subtopic Maths Mean Scores for IRI and GRZ Schools

	No. of valid cases		Maximum for Sub- Topic	Mean Performance		Mean %		Median	
Sub-Topic	IRI Centre	GRZ School	IRI Centre and GRZ Schools	IRI Centre	GRZ Schools	IRI Centre	GRZ Schools	IRI Centre	GRZ Schools
Sets	970	842	3	2.48	2.2	83%	73%	3.0	2.0
Notation and Numeration	970	842	2	1.0	0.86	50%	43%	1.0	1.0
Addition and Subtraction	970	842	5	3.37	3.36	67.4%	67.2%	4.0	4.0
Multiplication	970	842	5	2.58	2.22	52%	44.4%	3.0	2.0
Division	970	842	5	2.84	2.28	57%	46%	3.0	2.0
Number Patterns	970	842	2	1.09	0.91	55%	46%	1.0	1.0
Decimal Measures	970	842	1	0.37	0.34	37%	34%	0	0
Shapes and Measureme nts	970	842	4	1.55	0.72	39%	18%	1.0	0.5
Fractions	970	842	3	1.76	1.15	59%	38%	2.0	1.0
Grand Total	970		30	17.11	13.98	57%	46.6%	18.0	14.5

Performance in Numeracy By Sub-Topics

The analysis of the mean scores per subject or sub-topi8c is provided in a comparative manner for the IRI centres and the GRZ Schools. The analysis is based on Table – given above.

Sets

The maximum marks for the sub-topic on sets was 3 marks. The overall mean score for both the IRI and GRZ Schools was 2.35. A comparative ;analysis indicates that the IRI (2.48) performed significantly better than the GRZ (2.2). Half of the IRI pupils obtained full marks of 3 or less. Half of the GRZ pupils obtained two marks or lower out of three.

Notation and Numeration

There were two questions on notation and numeration making for the full marks of (2). Comparatively speaking, there was a significant difference in performance between the IRI Centres and the GRZ schools. The overall mean mark was 0.94. The IRI pupils performed

better than their counterparts from the GRZ Schools with the mean scores of 1.0 and 0.86 respectively. Half of pupils from both the IRI Centres and GRZ obtained 1 mark or less.

### **Addition and Subtraction**

There were five questions under addition and subtraction contributing five (5) marks. There was no significant difference in performance between the IRI pupils and the GRZ pupils. With the overall mean at 3.36, the IRI obtained 3.37 and the GRZ obtained 3.36. The result shows that both the IRI pupils and the GRZ pupils have the same basic understanding and application of the concept of addition and subtraction. Half of the pupils from both the GRZ and IRI obtained 4 marks or less.

### **Multiplication**

There were five test items on multiplication. The maximum marks were five (5). There was a significant difference in performance between the IRI and GRZ pupils. The overall mean score was 2.41. The IRI pupils performed better than their counterparts in the GRAZ Schools with mean scores of 2.58 and 2.22 respectively. Whereas half of the IRI pupils got 3 marks or less, half of the GRZ pupils obtained 2 marks or less.

### **Division**

There were five test items on division. The maximum marks were five (5). The difference in performance between the IRI and the GRZ schools was significant. The overall mean score for both types was 2.58 out of 5. A comparative analysis indicates that the IRI school pupils performed better than their counterparts from the GRZ in understanding and applying the concept of division. The mean marks for the IRI centres was 2.84 with a median of 3.0. the mean mark for the GRZ schools was 2.28 with a median of 2.0.

### **Number Patterns**

There were two test items on the number patterns. The maximum marks for the subtopic was two. The overall mean score was 1.01 and the median was 1.0. The IRI Centres performed significantly better than the GRZ Schools. The mean score for a the IRI Centres was 1.09 and the mean score for the GRZ Schools was 0.91. Half of both the IRI and GRZ children obtained 1 mark of les.

### **Decimal Measures**

There was one question on the decimal measures. The maximum mark for the decimal measures subtopic was 1. The overall mean score was 0.35. There was no significant difference in performance between the IRI Centres and the GRZ school.



**Shapes and measurement**

There were four questions on shapes and Measurements. The maximum marks were four. The overall mean score was 1.1672. The overall median score was also 1.0. The difference in performance between the IRI Centres and the GRZ schools was very significant. While the IRI centres obtained a mean score of 1.55, the GRZ schools obtained a mean score of 0.72. 50% of the IRI pupils obtained 1 mark or less while 50% of the GRZ pupils obtained 0.5 marks.

**Fractions**

The test had three items on fractions. The maximum marks were three (3). The overall mean score was 1.48. The difference in performance between the IRI and GRZ schools was significant. The IRI Centres obtained a mean score of 1.76 while the GRZ schools obtained a mean score of 1.15. Half of the IRI pupils obtained two marks or less while half of the GRZ schools' pupils obtained 1 mark or less.

**Part Five: Results from the English paper 2 Test (Reading and Writing)**

**5.1 Introduction**

The English Paper 2 was divided into twelve (12) parts which mainly tested reading and writing. The twelve parts were: Alphabet, phonics, sight vocabulary, comprehension understanding, comprehension application, comprehension analysis, comprehension synthesis, composition synthesis, composition analysis, spelling, punctuation and composition understanding.

**5.2 Overall English Paper 2 (Reading and Writing) Mean Scores for the IRI Centres and GRZ Schools.**

	Overall Mean Scores	S.D	Median
Schools	14.0	7.58	15
IRI Centres	15.19	8.45	16
Overall	15.05	8.05	15.5

The table above shows that in English Paper 2, the overall mean score for both the IRI and GRZ schools was 15.5 out of the maximum of 30. This represented 51.6%. As can be seen from the table, there was no significant difference in performance between the IRI and the GRZ schools. While half of the IRI pupils obtained 16 marks or less, the GRZ pupils obtained 15 marks or less.

5.3 Sub -Topic Mean Scores for English Paper 2 for the IRI Centres and GRZ Schools.

Table: Subtopic English Paper 2 Mean Scores for IRI and GRZ Schools

	No. of valid cases		Maximum for Sub-Topic	Mean Performance		Mean %		Median	
Sub-Topic	IRI Centre	GRZ School	IRI Centre and GRZ Schools	IRI Centre	GRZ Schools	IRI Centre	GRZ Schools	IRI Centre	GRZ Schools
Alphabet	970	842	3	2.05	2.14	68%	71%	3.0	2.0
Phonics	970	842	3	1.3	1.4	43%	46.6%	1.0	1.0
Sight Vocabulary	970	842	4	2.52	2.53	63%	63%	3.0	3.0
Comprehension Understanding	970	842	4	2.34	2.36	58.5%	59%	2.0	2.0
Comprehension Application	970	842	4	1.9	1.73	47.5%	47.5%	2.0	2.0
Comprehension Analysis	970	842	1	0.48	0.41	48%	41%	0.0	0.0
Comprehension Synthesis	970	842	1	0.49	0.44	49%	44%	0.0	0.0
Composition Synthesis	970	842	1	0.18	0.20	18%	20%	0.0	0.0
Composition Analysis	970	842	1	0	0.12	0%	12%	0.0	0.0
Spellings	970	842	3	2.55	1.93	85%	64%	2.0	2.0
Punctuation	970	842	3	0.4	0.33	13%	11%	0.0	0.0
Composition Understanding	970	842	2	1.16	1.12	58%	56%	1.0	1.0
Grand Total	1,812		30	15.19	14.9	50.6%	49.6%	15.50	

Performance in the English 2 (Reading and Writing Paper)

Alphabet

There were three questions on the alphabet. The questions required the pupils to recognize and identify the letters of the alphabet. The maximum marks were three. The overall mean score was 2.09 and the median of 2.0. There was no significant difference in performance between the IRI and GRZ pupils. The GRZ pupils obtained a mean of 2.14 while the IRI schools obtained 2.05. The GRZ had a medium of 2 while the IRI had a medium of 3.0.

Phonics

There were three questions on phonics which required pupils to write three words with the sound “sh” in them, either at the beginning, middle or end. The maximum marks were three. The overall mean score obtained was s1.39. There was no significant different in performance between the IRI and the GRZ pupils. While the GRZ obtained 1.4, the IRI pupils obtained a mean score of 1.37. The median for both the IRI and GRZ was the same 1.0.

### **Sight Vocabulary**

There were four questions that required the pupils to fill-in the space in the sentences, using any of the words that were given. The maximum marks provided for were four (4). The overall mean score obtained was 2.52. The GRZ schools obtained 2.53 and the IRI centres obtained 2.52. The difference in performance was not significant.

### **Comprehension (Understanding)**

The question had four maximum marks. The pupils were requested to fill-in the blanks of a passage using the information given in a timetable. The overall mean score obtained was 2.3. There was no significant difference in the performance between the IRI and GRZ pupils. The IRI obtained a mean score of 2.3 while the GRZ obtained a mean score of 2.36.

### **Comprehension (Application)**

There were four questions. They were all based on the passage. The questions involved understanding the meanings of some actions in the passage, finding synonym, ordering events and rewriting a sentence.

The maximum marks were four. The overall mean score obtained was 1.87. There was a significant difference in performance between the IRI Centres and the GRZ schools. The IRI Centres had a better performance with a mean score of 1.99 while the GRZ schools had mean score of 1.73. This could mean that the IRI pupils had better skills of application in relation to the given passage on this test.

### **Comprehension (Analysis)**

The question on Analysis (Comprehension) required the children to analyse the passage so as to get the answer to the question. The difference in performance was not significantly different between the IRI centres and the GRZ schools. The overall mean score was 0.45. the GRZ schools obtained 0.4138 while the IRI centres obtained 0.489.

### **Comprehension (Synthesis)**

The question on synthesis (Comprehension) was based on the passage. The pupils were expected to build-up (synthesise) the answer from the passage. There was no significant difference in performance between the IRI Centres and the GRZ schools. The overall mean score was 0.4735. The IRI Centres obtained 0.4943 while the GRZ schools obtained 0.4138.

### **Composition (Synthesis)**

The question required the children to write a sentence explaining the answer based on the information in the passage. The overall mean score was 0.47. There was no significant difference in the performance between the IRI Centres and the GRZ schools. The IRI Centres obtained 0.19 and the GRZ schools obtained 0.21.

### **Composition (Analysis)**

The question on composition (Analysis) requested the children to write a sentence explaining why they thought an action occurred based on the information in the passage. The overall mean score was 0.11. There was no significant difference in performance between the IRI Centres and the GRZ schools. The IRI obtained 0 while the GRZ obtained 0.13.

### **Spellings**

There were three questions on spellings in which the children were requested to choose or circle one word which was spelled correctly from a set of four words. The maximum marks was 3. The overall mean score was 2.27. There was a significant difference in performance between the IRI Centres and the GRZ schools. . The IRI Centres obtained 2.56 and the GRZ schools obtained 1.93. The results further show that the two types of schools had the same median of 2.0.

### **Punctuation**

There were three questions on Punctuation. The pupils were requested to rewrite the words in the sentences by using capital letters, commas, full stops., apostrophes, question marks and exclamation marks. The maximum marks were 3. The difference in performance was significant. The overall mean score out of a maximum of three (3) was 0.37. This reflected a performance of 12%. The IRI centres obtained 0.40 while the GRZ schools obtained 0.33.

### **Composition (Understanding)**

There were two questions on writing (Composition) which required understanding. One question required the pupils of put sentences in order to form a short paragraph while the other question required the pupils to complete a sentence based on a picture of a ball. The overall mean score was 1.14. The difference in performance between the IRI centres and the GRZ schools was not significant. The IRI centres obtained 1.16 while the GRZ schools obtained 1.12.

## **Part Six: Results From English Paper 1 (Listening and Speaking)**

Part Six had two sections. Section 1 was on Listening and it had 15 questions. Section 2 was on speaking and had 5 questions.

### **Section 1: Listening**

This section required the pupils to demonstrate their understanding of the spoken word by answering general questions about themselves or their family, following instructions in completing a simple task, giving clear directions for finding a place within their school grounds and performing simple tasks.

- **General Questions**

There were 7 General Questions on the pupils, about their families, giving instructions and giving directions. The maximum marks were 7. The overall mean score obtained was 4.3. There was no significant difference in performance between the IRI Centres and GRZ Schools. The median for IRI Centres was 4.0 while the GRZ's was 4.5.

- **Performance Tasks**

There were 4 questions on performance tasks that were based on action, touch, movement and sound. The maximum marks were four (4). The overall mean score was 2.95. There was a significant difference in performance as the IRI centres had a better performance with a mean score of 3.11 while the GRZ school scored 2.77. The median for the IRI Centres was 4.0 while the GRZ schools had 3.0.

- **Using Language Socially**

There were two questions on using language socially which involved the pupils showing how they would greet a friend or classmate if they met somewhere. The maximum marks were 2.0. The overall mean score was 0.80. The difference in performance between the IRI and GRZ was not significant. The IRI obtained a mean score of 0.78 while the GRZ schools obtained 0.82.

- **Making Choices and Correcting False Statements**

There were two questions in this section that requested the pupils to respond to two questions which required making choices between given things or correcting a statement. The maximum marks were 2.0. The overall mean score was 0.87. There was a significant difference in performance between the two types of learning environments. While the IRI Centres obtained 0.7648, the GRZ Schools showed more competence in the listening aspect on making choices and correcting false statements.

## **Section 2: Speaking**

This section required the pupils to demonstrate their vocabulary and pronunciation by answering questions about a picture and talking about a picture. The section also elicited pupils' responses about a timetable. The maximum marks were 5. The overall mean score was 2.37. There was a significant difference between the two types of schools. The GRZ schools performed relatively better with a mean score of 2.70 while the IRI Centres obtained 2.08. The result shows that the GRZ pupils are better at the spoken English language than the IRI pupils.

Grand Total Listening and Speaking

	Listening			Speaking			Grand Total		
	Max	Mean	Median	Max	Mean	Median	Max	Mean	Median
IRI	20	16	17	5	4	4	20	11	12
GRZ	20	16	17	5	3.9	4	20	12	13
	20	16	17	5	4	4	20	12	12.5

Total Listening

There was no significant difference in performance between the IRI and GRZ in Listening.  
Both the IRI and GRZ got a mean percentage of 80%.

Total Speaking

The performance by the IRI and the GRZ was not significantly different. While the IRI had a mean percentage of 78%, the GRZ’s mean percent was 80%.

Grand Total for English Paper 1: Listening and Speaking

There no significant difference between the two types of schools. The GRZ schools had a mean percent of 65% whereas the IRI had a mean percent of 60%